

Berberis densifolia, spec. nov.

Frutex 0.3–1.2 m. altus; ramuli juniores geniculati, sulcato-angulati, flavi, vetustiores flavescenti-cinerascentes; internodia 1–2(–4) cm. longa; spinae tripartitae, flavae, mediae ad 1.3 cm. longae. Folia ad 6 fasciculata, crasse coriacea, cuneata vel oblanceolata, apice sensim acuta, mucronata, basi sensim in petiolum 1–2 mm. longum attenuata, margine saepe revoluta, versus apicem dentibus 1–3 munita, minora 1 cm. longa, 5–6 mm. lata, majora 3 cm. longa, 7–10 mm. lata, supra viridia, subtus albo-pruinosa vel in sicco ferruginea, indistincte laxe reticulata. Flores nondum vidi. Fructus ad 3 fasciculati, ovales, circiter 7–9 : 6 mm. magni, stylo brevi coronati, atrocoerulei; pedicelli ad 7 mm. longi; semina 3.

FORMOSA: PROV. NANTO: Mount Kiraishui, alt. 3500–3600 m., E. H. Wilson, no. 10074 (type), Mar. 6, 1918 (bush 0.3–1.2 m., fruit blue-black).

The nearest relatives among the Chinese species appear to be *Berberis triacanthophora* Fedde, which has, however, reddish-brown, round twigs and much longer flower-stalks and *B. replicata* W. W. Smith, which differs in having round twigs, longer flower-stalks and smaller fruits.

The other Formosan species can all be easily distinguished: *Berberis aristato-serrulata* Hayata by the finely serrulated leaf-margin, *Berberis Kawakamii* Hayata by the larger, more strongly reticulate and non-pruinose leaves and the 10–15-flowered inflorescences with longer pedicels, *Berberis brevisepala* Hayata by the uniovulate ovaries, the red twigs and the larger and wider leaves, *Berberis mingetsensis* Hayata by the very large, strongly reticulate leaves.

Berberis densifolia Wilson no. 10074 has been distributed as *Berberis Kawakamii* Hayata.

Berberis Cavaleriei Léveillé in Fedde Rep. Spec. Nov. ix. 454 (1911).—Schneider in Oesterr. Bot. Zeitschr. LXVII. 140 (1918).

Berberis Griffithiana Léveillé Fl. Kouy-Tcheou. 48 (1914).—Non Schneider.

The type-specimens were collected in Kweichow by J. Cavalerie (no. 3209), it has now been found also in Chekiang (*R. C. Ching*, Plants of Chekiang, no. 2336), Hunan (*Handel-Mazetti*, no. 438, inter urbes Linling and Sinning, alt. 200–500 m. and no. 552, ad minas Hsikwang-schan prope urbem Hsinhwa, in fruticetis, alt. 600–800 m.) and the variety *pruinosa* Byhouwer in Anhwei (*R. C. Ching*, no. 3248).

Berberis Kawakamii Hayata in Jour. Coll. Sci. Tokyo xxx. Art. i. 24 (1911); Icon. Pl. Formos. i. 40, t. 9 (1911); l. c. iii. 4 (1914).—Kanehira, Formos. Trees 32, fig. (1917).—Schneider in Oesterr. Bot. Zeitschr. LXVII. 140 (1918).

The original material was found by T. Kawakami on Mt. Morrison, alt. 2700 m.; among E. H. Wilson's specimens three are from the same province (no. 9720, Arisan, prov. Kagi, alt. 2333–2933 m., no. 10910, Arisan to Mt. Morrison, prov. Kagi, alt. 2666–3666 m., and no. 10952,

Arisan to Mt. Morrison, alt. 3666 m.), and one from province Nanto (no. 10060, from Nanto to Noko via Musha, alt. 2666–3166 m.).

Berberis silvicola Schneider in Sargent Pl. Wils. III. 438 (1917).

The type-material was found by E. H. Wilson in western Hupeh (no. 2879); it appears to grow also in Yunnan (G. Forrest, no. 18195), so probably it is still to be found in Szechuan or Kweichow.

Berberis diaphana Maximowicz in Bull. Acad. Sci. St. Pétersb. XXIII. 309 (1876); in Mém. Biol. IX. 712 (1877); Fl. Tangut. 32, t. 8, fig. 1–7 (1889); in Act. Hort. Petrop. XI. 42 (1890).—Hemsley in Jour. Linn. Soc. XXIII. 31 (1886).—Schneider in Bull. Herb. Boiss. sér. 2, v. 398 (1905); VIII. 195 (1908); in Oesterr. Bot. Zeitschr. LXVI. 321 (1916).—Fedde in Bot. Jahrb. XXXVI. beibl. LXXXII. 44 (1905).—Rehder in Sargent, Trees & Shrubs, II. 19, t. 109 (1907); in Jour. Arnold Arb. v. 139 (1924).

Berberis yunnanensis Hutchinson in Bot. Mag. CXXXIV. t. 8284 (1908).—Non Franchet.

Discovered in Kansu by N. Przewalski, this species has been collected in the same province by G. N. Potanin, R. C. Ching (Wulsin Expedition no. 432, 556, 961) and J. F. Rock (no. 12634, 13474, 13525, 13529, 13574). In Shensi it was found by G. Giraldis (Fedde l.c.), in Szechuan by Farges (Eastern Szechuan, Tchen-keou-tin, 1893) and E. H. Wilson (Western Szechuan, no. 930, 4190, 2865, 4170). Recent material shows that the range of the species extends further south-west and west; it has been found by Handel-Mazetti in northwestern Yunnan (no. 8117, ad confines tibeticas sub jugo Dokerla, 28° 15', in regionis frigide temperatae abieto-salicetis, alt. 3800–4150 m.) and by J. F. Rock in eastern Tibet (no. 13263, 13272, 13273, 14100, 14108, 14115).

Berberis aemulans Schneider in Sargent, Pl. Wils. III. 434 (1917); in Oesterr. Bot. Zeitschr. LXVI. 321 (1916).

Berberis diaphana Schneider in Sargent, Pl. Wils. I. 353 (1913), ex parte.—Non Maximowicz.

The type-locality for this species is western Szechuan, Wa-shan (E. H. Wilson, no. 930), other material collected by E. H. Wilson comes from the same province (no. 3145, 4190, Sungpan). It appears to grow also in northwestern Yunnan, as shown by the following specimens of G. Forrest; no. 19521, margins of pine forests on the Mekong-Salwin divide, lat. 27° 54', long. 98° 50', alt. 3000–3300 m. and no. 20295, Mekong-Salwin divide, Sie-la, lat. 28°, long. 98° 40', alt. 4000–4300 m.

Berberis Faxoniana Schneider in Oesterr. Bot. Zeitschr. LXVI. 325 (1916).

About the geographic distribution of this species nothing was known, as Schneider described it from material grown in Arnold Arboretum and perhaps introduced from Vilmorin's nurseries. The numbers 13829, 16554 and 18992 of the *Plantae Forrestianae* from Yunnan appear to be

Berberis Faxoniana, but the labels do not give any clue in which part of Yunnan this material has been collected.

***Berberis Wilsonae* var. *subcaulialata* Schneider in Oesterr. Bot. Zeitschr. LXVII. 298 (1918).**

Berberis subcaulialata Schneider in Fedde Rep. Spec. Nov. vi. 267 (1909); in Sargent, Pl. Wils. i. 369 (1913).—Hesse in Mitt. Deutsch. Dendr. Ges. XXII. 266 (1914).—Bean in Gard. LXXXV. 501, fig. (1921).

Berberis Coryi Veitch, New Hardy Pl. W. China, 7 (1913).

This variety was first collected by E. H. Wilson in western Szechuan (no. 1267), but it is found also in western Yunnan, as shown by the specimens of *E. E. Maire* (no. 67, coteaux arides, rocaillieux derrière Tong-tchouan, alt. 2990 m., no. 179, collines arides, rocailleuses de Pokio, alt. 2990 m.) and *G. Forrest* (no. 18516, Yunnan, no. 20179, side valleys on the mountains N. E. of Atuntze, lat. 28° 35' N., long. 99° 10' E., alt. 3300–3600 m., N. W. Yunnan, and no. 20378, ravines on the Mekong-Yangtze divide, lat. 27° 36' N., long. 99° 10' E., alt. 3600 m., N. W. Yunnan.

***Berberis aggregata* var. *Prattii* Schneider in Sargent, Pl. Wils. III. 443 (1917); in Oesterr. Bot. Zeitschr. LXVII. 296 (1918).**

Berberis polyantha Hemsley in Jour. Linn. Soc. Bot. XXIX. 302 (1892), quoad specim. *Prattii* no. 80.

Berberis Prattii Schneider in Sargent, Pl. Wils. i. 376 (1913).—Sprague in Bot. Mag. CXI. t. 8549 (1914).

Berberis integerrima Hort. Veitch, pro parte, ex Schneider l. c. (1918), pro synonym.—Non Bunge.

Berberis Geraldii Veitch, New Hardy Pl. W. China 7 (1913), nomen.

Berberis brevipaniculata Bean, Trees and Shrubs i. 236 (1914).—Non Schneider.

The range of this species appears to extend from western Szechuan, where it was discovered (*E. H. Wilson*, no. 1261 type, 1050 A, 1073, 1300, 4173) into northwestern Yunnan (*G. Forrest*, no. 20292, on Dokerla, Mekong-Salwin divide, lat. 28° 20' N., long. 98° 40' E., alt. 3600 m.).

***Berberis Caroli* Schneider in Bull. Herb. Boiss. sér. 2. v. 459 (1905).**

Berberis integerrima var. *stenophylla* Maximowicz, Fl. Tangut. 29 (1889).

Non *Berberis stenophylla* Lindley, nec Hance.

Berberis integerrima Maximowicz Enum. Pl. Mongol. 33 (1889), quoad specim. ex Ordos.

As mentioned in the enumeration of the *Berberis* of the Rock collection, two specimens, no. 13314 from northwestern Kansu and no. 14362 from eastern Tibet seem to belong to *Berberis Caroli* rather than to the closely related *Berberis Vernae* Schneider. This means a much wider range for *B. Caroli* which was discovered by *G. N. Potanin* in Ordos (southern Mongolia, 1884), and since then no typical material has been found.

***Berberis Silva-Taroucana* Schneider in Sargent, Pl. Wils. i. 370 (1913); in Oesterr. Bot. Zeitschr. LXVII. 217 (1918).—Hesse in Mitt. Deutsch. Dendr. Ges. XXII. 266 (1914).**

The type-specimen of this species is *E. H. Wilson's* no. 2860, from

Chiu ting shan, western Szechuan; other material from the same province constitutes the nos.: 955, 1012, 1012A, 1059, 2857, 2858, 2861, 2863A, 2867, 3151A, 4153, 4288, 4726. The area in which the species occurs appears to be much larger, as shown by Wilson's no. 645, collected in western Hupeh, and *J. F. Rock's* nos. 12473, 13522 and 14913 from southwestern Kansu.

Berberis Mouillacana Schneider in Sargent, Pl. Wils. I. 371 (1913); in Oesterr. Bot. Zeitschr. LXVII. 217 (1918).

Berberis Mouillacana was known only from western Szechuan, in the specimens: *E. H. Wilson* no. 1039 (type), 1041, 1283, 4123. The specimens collected by *J. F. Rock* demonstrate its occurrence in southwestern Kansu, north of the original area (*J. F. Rock*, nos. 12303, ?12429, 12443, ?12458, 13202, 14898).

Berberis Boschanii Schneider in Sargent, Pl. Wils. I. 369 (1913); in Oesterr. Bot. Zeitschr. LXVII. 225 (1918).

This is another case of a *Berberis*, discovered in western Szechuan (*E. H. Wilson*, no. 1166, type, 3156), which appears to extend northward into Kansu (*R. C. Ching*, Wulsin Expedition, no. 86 and 773, southwestern Kansu; *J. F. Rock*, no. 12513, southwestern Kansu and no. 13300 and 13316, northwestern Kansu) and into eastern Tibet (*J. F. Rock*, no. 13261, 13274, 13366, 13920, 13948, 14073, 14079).

Berberis Lecomtei Schneider in Sargent, Pl. Wils. I. 373 (1913); in Oesterr. Bot. Zeitschr. LXVII. 225 (1918).

? *Berberis heteropoda* Franchet in Bull. Soc. Bot. France, XXXIII. 386 (1896).—Non Schrenck.

Berberis sinensis var. *typica* Franchet, Pl. Delav. 35 (1889).—Non Poiret.

Berberis Thunbergii var. *glabra* Franchet, l. c. 35 (1889).—Schneider in Bull. Herb. Boiss. sér. 2. VIII. 204 (1908).

Berberis pallens Diels in Not. Bot. Gard. Edinb. VII. 342 (1912).—Non Franchet.

This species was known to occur in Yunnan, the type-material was collected in that province by Delavay (no. 1047), later more specimens were found by *Delavay* (no. 2247 and specimens from Kou toui and Li-chiang range) and by *G. Forrest* (nos. 17143, 20621, 20802, 2271 and 2343). Schneider described two specimens from southern Szechuan (nos. 1503 and 1536), found by himself in 1914, as probably belonging to *B. Lecomtei*. A confirmation of the occurrence in this province is given by no. 22395 of *G. Forrest*: side valleys of the mountains southeast of Mu-li, lat. 27° 50' N., long. 101° E., alt. 3300–3600 m., southwestern Szechuan.

Berberis dasystachya Maximowicz in Bull. Acad. Sci. St. Pétersb. XXIII. 308 (1877); in Mém. Biol. IX. 711 (1877); Fl. Tangut. 30, t. 5, fig. 1–7 (1889); in Act. Hort. Petrop. XI. 41 (1890).—Hemsley in Jour. Linn. Soc. XXIII. 3 (1886).—Kanitz in Szechenyi, Keletazs. Utján. Tudom. Ered. II. 794 (Pl. Enum. 5) (1891); in Szechenyi, Wiss. Ergebn.

Reise Ostas. II. 681 (1898).—Bretschneider, Hist. Eur. Bot. Disc. China, 971 (1898).—Schneider in Bull. Herb. Boiss. sér. 2, v. 664 (1905); VIII. 262 (1908); in Sargent, Pl. Wilson III. 442 (1917); in Oesterr. Bot. Zeitschr. LXVII. 287 (1918).—Fedde in Bot. Jahrb. XXXVI. beibl. LXXXII. 43 (1905).—Rehder in Jour. Arnold Arb. v. 142 (1924).

Berberis heteropoda var. *oblonga* Maximowicz in Act. Hort. Petrop. XI. 41 (1890).—Non Regel.

? *Berberis dolichobotrys* Fedde in Bot. Jahrb. XXXVI. beibl. LXXXII. 41 (1905).

Berberis vulgaris var. *dasystachya* Voss in Putlitz & Meyer, Landlexicon v. 709 (1913).

Originally described from material collected by N. Przewalski in Kansu, the species was found in that province by all subsequent collectors: *G. N. Potanin* (see Schneider, l. c. 1905), *L. Loczy* (see Kanitz, l. c.), *W. Purdom* (no. 1014), and *J. F. Rock* (no. 12207, 12465, 12504, 12808, 12885, 13291, 13514, 13561, 14680). Meanwhile it had been discovered in several adjacent provinces: in Hupeh by *A. Henry* (no. 6816), *E. H. Wilson* (no. 307), and *W. Y. Chun* (no. 3910, 4219), in Szechuan by *Von Rosthorn* (no. 962), *Farges* (see Schneider, l. c. 1918) and *E. H. Wilson* (no. 4203), in Shensi by *G. Giraldis* (no. 51, see Fedde l. c.). So it was to be expected also in eastern Tibet, especially in the Kokonor region, between western Szechuan and northwestern Kansu, where it has now been found by *J. F. Rock* (no. 13262).

TWO NEW GENERA AND NEW COMBINATIONS OF RUTACEAE-AURANTIEAE FROM PAPUA

(REVISIO AURANTIACEARUM II)

TYÔZABURÔ TANAKA

Echinocitrus,¹ gen. nov.

Flores mediocres, axillares, solitarii; calyx cupulatus, basi attenuatus, punctatus, lobis 5 ovato-deltaideis glabris; petala 5, imbricata, oblongo-obovata, basi plus minusve attenuata, punctata; stamina 10, filamentis filiformibus liberis, antheris linearibus obtusis; ovarium lageniforme, stipitatum, glabrum, apice in stylum attenuatum, stylo staminibus paulo longiore. Bacca obovoidea, frequenter basi elongata, punctata, laevissima, corticosa, 5-locularis; pulpa vesiculari nulla, succo exiguo; semina biseriata, reniformia, compressa.—Frutex ramosissimus, ramis patentibus saepissime pendulis, spinosissimis, spinis geminatis, puberulis. Folia alterna, ovato-rhomboidea, obsolete punctata, nervis utrinque vix prominulis, breviter petiolata.

Genus *Triphasiae* affine, floribus pentameris longe pedicellatis, foliis simplicibus irregulariter crenulatis, fructibus obovoideis magnitudine cerasi.

Species unica, *Paramignya Brassii* C. T. White.

¹ From the Greek, ἔχινος, hedgehog, and *Citrus*.

Echinocitrus Brassii, comb. nov.

Paramignya Brassii C. T. White in Jour. Arnold Arb. vii. 231 (1926).

This exceedingly spiny Papuan species of the Citrus tribe was only once collected by L. J. Brass in Rigo, British New-Guinea, and the specimens are deposited in the Arnold Arboretum. It is very unlike *Paramignya*, which is a vine with solitary curved spines and large elliptic leaves having somewhat motile petioles, but the present species is closely allied to *Triphasia* in its puberulent, somewhat zigzag branches armed with paired sharp spines, in the thin leaves without prominent reticulation, solitary flowers with cupulate calyx and slender petals, free filiform filaments and linear anthers, stalked ovary narrowed into a long style, and in the few-celled bright-colored berry without pulp-vesicles. It is, however, distinct from *Triphasia* primarily in having 5-merous flowers, while both species of *Triphasia* (*T. trifolia* and *T. grandifolia*) have always 3-merous flowers. This species is far more spiny than *Triphasia*, especially at the juvenile stage, and the fruit is very much larger and mostly pointed at the base, not at the apex, the segments containing distinctly biseriate seeds. The leaves are crenate, not entire, and the pedicel of the fruit is very much elongated: calyx-lobes are distinct and ovoid-deltoid, not so broad and flat-triangular as in *Triphasia*. The calyx lacks pubescence but is only minutely ciliate on the margin. The appearance of the fruit is very much like an oval kumquat (*Fortunella margarita* Swingle), but it lacks pulp-vesicles.

Species of true *Paramignya* do not occur in Malay Archipelago, except *P. andamanica* (King) Tanaka which was once collected in Sumatra and Sumbawa.

Monanthocitrus,¹ gen. nov.

Flores majores vel minores, solitarii, axillares, breviter pedicellati; calyx cupulato-scutellatus, 5-lobatus, lobis triangularibus subpatentibus glabris; petala 5, imbricata, oblongo-ovata vel lanceolata, punctata; stamina libera, filamentis 8-10 tenuibus, antheris oblongis; ovarium globosum vel substipitato-obovoideum, disco annulari vel subpentagono, stylo crasso vel elongato, stigmatibus subpentagono. Bacca globosa vel obovata, 5-locularis, cum pulpa vesiculari.—Frutex, ramis teretibus gracilibus, spinis 2 in foliorum axillis. Folia oblongo-lanceolata, sub-integra vel crenulato-subdentata, breviter petiolata.

Genus Wenzeliae affine, foliis acuminato-caudatis, nervis subtus et supra magis prominentibus, distinctissime anguste reticulatis; ramis spinosis, spinis geminatis acutissimis.

Species typica, *Citrus cornuta* Lauterbach.

Monanthocitrus cornuta, comb. nov.

Citrus cornuta Lauterbach in Lorentz, Nova Guinea, viii. 292 (1910).

Type specimen: Rijks Herbarium, Leiden (*Versteeg* no. 1551).

The specific name was derived from an abnormal fruit which bore 5

¹ From Greek, μονάνθος, one-flowered, and *Citrus*.

persistent styles. Later material (Rümer no. 633) deposited in the Leiden Herbarium has normal fruits with one styler point, and was later referred to by Lauterbach in a supplementary note (l. c. 825 [1912]). The flowering specimen deposited in the herbarium at Berlin-Dahlem shows that the species is far removed from the genus *Citrus* and much more closely related to the genus *Wenzelia*, first described from the Philippines.

Wenzelia is characterized by solitary axillary flowers with slender pedicel, 5 petals, 5 calyx-lobes and 10 stamens. The leaves of *Wenzelia* are large, with obscure reticulation and are borne on slender branchlets unarmed or rarely armed with single spines in the axils. The type of *Monanthocitrus* in its essential characters approaches very much *W. brevipes* Merr., but in appearance it is closer to *Citrus inodora* Bail., having distinctly reticulated leaves, paired sharp spines at each node and short-pedicelled roundish fruits resembling a lime (*Citrus aurantifolia* Swingle). The ovary of *Monanthocitrus* contains only 2 ovules in each locule, while *Wenzelia* contains 6.

***Monanthocitrus grandiflora*, comb. nov.**

Citrus grandiflora Lauterbach l. c. 292.

This species is closely allied to the former, but it has very large petals measuring about 35 mm. in length, while those of the former only attain to 5 mm. A sterile specimen deposited in Leiden Herbarium sufficiently shows its proper systematic position and relation to the former species, although the only flowering material (in Buitenzorg) has not been examined at this time.

***Wenzelia dolichophylla*, comb. nov.**

Citrus dolichophylla Schumann & Lauterbach, Fl. Deutsch. Schutzgeb. Südsee, 377 (1901).

Type specimen: Herbarium of Botanisches Museum, Berlin-Dahlem. (Lauterbach no. 3108).

This species differs from the type of the genus (*Wenzelia brevipes* Merrill in Philip. Jour. Sci. x. Bot., 272 [1915]) in the narrower leaves with the lateral veins diverging at about right angles. The solitary axillary flower has a slender pedicel gradually merging into an almost funnel-shaped small calyx, the limb of which remains in cupular form until fruiting time. In the case of *Monanthocitrus cornuta*, the calyx spreads open in the fruiting stage with its lobes recurved at the end. The fruit of this species is ellipsoid, very thin-skinned, and entirely lacks pulp-vesicles.

***Wenzelia paludosa*, comb. nov.**

Citrus paludosa Lauterbach in Bot. Jahrb. LV. 263 (1918).

Type specimen: Herbarium of Botanisches Museum, Berlin-Dahlem. (Ledermann no. 7173).

This species has occasionally simple spines at the node, while the two other species are entirely unarmed. The leaves are still narrower than